Abstract

Concentration of metal element which promotes crystallization of silicon and which exists within a crystalline silicon film obtained by utilizing the metal element is reduced. A first heat treatment for crystallization is performed after introducing nickel to an amorphous silicon film 103. Then, laser light is irradiated to diffuse nickel element which is concentrated locally. After that, another heat treatment is performed within an oxidizing atmosphere at a temperature higher than that of the previous heat treatment. At this time, HCl or the like is added to the atmosphere. A thermal oxide film 106 is formed in this step. At this time, gettering of the nickel element into the thermal oxide film 106 takes place. Then, the thermal oxide film 106 is removed. Thereby, a crystalline silicon film 107 having low concentration of the metal element and a high crystallinity can be obtained.